Educación Médica

ORIGINAL

Characterization of the learning environment of an Internal Medicine course for medical students of ICESI University of Cali, Colombia

Janer Varón Arenas[a], Henry Arley Taquez Quenguan[b],
Nathalia Salazar Falla[a,*], Diana Salazar Ulloa[b]

[a] *Universidad Icesi – Fundación Valle del Lili, Cali, Colombia*
[b] *Universidad Icesi, Centro de Recursos para el Aprendizaje, Cali, Colombia*

Abstract

Introduction: The learning environment has many constructs involved and there is not a single ideal instrument that measures all of them. In Colombia, there are few publications on measuring the learning environment in clinical settings, most of them have only quantitative measurements.

Objective: To characterize the learning environment of the students of the internal medicine course of ICESI University.

Material and methods: Mixed study (quantitative and qualitative), which is based on the classroom research method, where the first step is to diagnose the current learning environment.

Results: 58 students participated in the study. The DREEM overall score was of 125/200. The average of teacher's evaluation was 6.38/7. The percentage of students who passed the final written evaluation was 96.7%. We also describe favorable and unfavorable findings in objectives, methodology, didactics, learning resources, evaluation and interaction of educational actors.

Discussion: The results allow us to say that although in general the students perceive a more positive than negative view by DREEM questionnaire, we found in the other results multiple points that can be improved. Curricular changes and comprehensive teacher training plans are necessary to meditate before, during and after their teaching practice, in order to promote educational innovation in the classroom.

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* Corresponding author.
  E-mail address: nathalia.salazar.falla@gmail.com (N.S. Falla).

Caracterización del ambiente de aprendizaje de un curso de Medicina Interna en el pregrado de Medicina de la Universidad ICESI, Cali- Colombia

Resumen

Introducción: El ambiente de aprendizaje tiene muchos constructos involucrados y no existe un solo instrumento ideal que los mida a todos. En Colombia hay pocas publicaciones sobre la medición del ambiente de aprendizaje en entornos clínicos, y la mayoría solo tienen mediciones cuantitativas.

Objetivo: Caracterizar el ambiente de aprendizaje de los estudiantes del curso de Medicina Interna de la Universidad ICESI.

Material y métodos: Estudio mixto (cuantitativo y cualitativo) que se basa en el método de investigación en el aula, donde el primer paso es diagnosticar el entorno de aprendizaje actual.

Resultados: Cincuenta y ocho estudiantes participaron en el estudio. El puntaje general del DREEM fue 125/200. El promedio de evaluación del docente fue de 6,38/7. El porcentaje de estudiantes que aprobaron la evaluación final escrita fue del 96,7%. También encontramos hallazgos favorables y desfavorables en objetivos, metodología, didáctica, recursos de aprendizaje, evaluación e interacción de actores educativos.

Discusión: Los resultados nos permiten decir que, aunque en general los estudiantes perciben una opinión más positiva que negativa del ambiente mediante el cuestionario DREEM, encontramos en los otros resultados múltiples puntos de mejora. Los cambios curriculares y la capacitación integral docente son necesarios para meditar antes, durante y después de la práctica docente, a fin de promover la innovación educativa en el aula.

Introduction

Since last century, new conceptions about education have been proposed and the need for change in their quality improvement policies with a curriculum based on competences that create meaningful learning in students.[1,2]

This is of great importance in the medical education, as medicine can be considered as a complex art for its continuous advances and multiple factors that surround it. Attempts have been made to categorize medical education as ''formal'' (''classroom'') and informal (''practice places''), the first one being perceived as highly structured, and the other one as lacking in rigor or structure, almost chaotic.[3] This distinction reflects the prejudice of a possible lack of educational process of teaching in the clinical environment, rather than understanding that it carries its own pedagogy.[4,5]

Practice places are diverse, sometimes this causes adapting challenges to medical students that where mainly trained within classroom areas.[6] Each environment requires different skills from students and attendings, each of these environments has advantages and disadvantages that must be addressed.[7,8]

Everything described above is part of the learning environment. This is influenced by the attending, students' relationships and the physical environment where the session takes place. It is also important to communicate to the students the learning objectives, expectations, experiences, attitudes, knowledge and skills that should be acquired during the process.[9,10,15] It is also important to discuss the evaluation process and the feedback.

With this known, there is not a single ideal instrument that measures all the constructs involved in the learning environment. It is now accepted that instruments of quantitative (qualifications, DREEM questionnaire, teacher's qualification)[5,13] and qualitative analysis must be combined to obtain judgments about how a determined learning environment is defined.[11,12]

In Colombia, there are few publications on measuring the learning environment in clinical settings, most of them, have only quantitative measurements and the few that include qualitative analysis have a very small sample.[15,16]

To achieve changes in teaching practice it is necessary to apply research processes that require, first, to know the current state of the learning environment, in order to identify training needs, which can be use in the curricular redesign of the course. That is why the objective of this study is to characterize the learning environment of the students of the internal medicine course of the ICESI University, in order to obtain the necessary information, which later allows, a redesign of a competency-based course.

Methods

Mixed qualitative and quantitative study. We used the Scholarship of teaching and learning method (SoTL). The Internal Medicine course is the first clinical course of the Medicine career in ICESI University, is a theoretical – practical course, 20 weeks intensity, for students of 6 semester of Medicine (of a total of 12 semesters). The theoretical content includes 90 topics from a guidebook of Internal Medicine and 15 modules. The course evaluates 3 aspects: attitudinal, (20%), aptitude (30%) and knowledge (50%) through a written evaluation in a scaled score range from 1 to 5.

This course was chosen for convenience, as noted above it is the first clinical experience that medical students have and as teachers of the same, we were interested in knowing the learning environment that was being carried out until that moment.

Qualitative collecting data techniques: Participant Observation: The teachers observed their own classes, recorded their classroom experiences and created observation categories that allowed them to focus on specific aspects of the observation.

Semi-structured Interviews were applied to teachers and students about their perception of the whole experience. Guides were used, and some categories were established.

Focal Groups: 2 groups were organized (teachers and students) to know their perceptions about the teachers, their way of teaching and the knowledge transmitted.

Quantitative collecting data techniques: Teacher's evaluation before the end of the semester. 22 questions with an answer option from 1 to 7, with 1 being the lowest score. The DREEM (Dundee Ready Education Environment Measure) questionnaire was applied to the total of students in its validated spanish version,[14] we chose this questionnaire because it has international application and was created to evaluate the educational environment of undergraduate medical schools. Students respond it using a five Likert-type scale options that, when coded and added together, provide a total score. We also used the results from the final written exam.

Analysis of Information: The categories were clearly described, and corelated. The results were systematized in a database elaborated through the ATLAS Ti software.

Results

Quantitative results

The course has a total of 60 students, 96% participated in the study. The sample has an average age of 20 years. Most of the students are from a high socio-economic level (41%), none work, and most live in Cali (93%). None of the students are married, have children or have disabilities.

DREEM: The internal consistency of the instrument was appropriate (Cronbach's alpha (0.86)). Average overall score of 125/200 (SD = 17.24). This represents a more positive than negative view of the learning environment. The five domains obtained scores located in the upper ranges of evaluation, which implies a positive interpretation. 14% qualify as trouble areas those items with an average of less than 2 responses (item 22, 7, 2, 50, 43, 24, 3) that correspond to perception of learning, perception of teachers, perception of the atmosphere and perception of the social environment.

Teacher's evaluation: It had a high response rate (81.9%), which gives confidence in the representativity of these results. The items evaluated were general development of the course, what happens in class, evaluation activities and learning strategies implemented by the teacher.

An average result was obtained for each teacher, being the total average of the teachers of the course 6.38 of a maximum of 7. The categories with lower scores were unanimous in all the areas of rotation and corresponded to evaluation activities and learning strategies implemented by the teacher.

Final written evaluation to students: Consists of two sessions of 40 questions each, with a duration of 90 min for each session, the questions are multiple-choice and some of correlation analysis.

The percentage of students who passed the exam was 96.7%. 86.3% of the students obtained a score less than or equal to 4. The mean score was equal to 3.60 with a deviation equal to 0.36 (2.8–4.4).

The authors of this study identified that the evaluation was confined to assessing the specific knowledge of the specialty and was not based on competencies.

Qualitative results

Objectives: Favorable Findings: There are clear objectives for the course. References are provided to expand information. Attendings are expected to teach their students how to deliver bad news. Unfavorable findings: The objectives of the classes were not exposed to the students. The coordinators and students consider that the basic levels were not deepened. Aspects related to professional ethics are not formally covered.

Methodology. Teaching role: Favorable Findings: Wide group of subspecialists. Some teachers present real or hypothetical clinical cases. The teacher reinforces aspects of the previous classes. Unfavorable findings: Master classes are favored. The teachers of the theoretical classes do not communicate with the teachers of the practical classes. Most of them have no teacher training. Student Role. Favorable Findings: They prepared for programmed play activities. They have extensive databases and study forms. Unfavorable findings: Resistance to participate in class was noted in the students. When the teachers asked questions, the students remained silent.

Didactics and Learning Resources. Favorable Findings: Use of real or designed clinical cases. The students had the time to perform a diagnostic approach. They use physical resources for their classes (board, cards and workshops). All the teachers used slides in their classes and provided them to the students. Few teachers used technological tools such as Kahoot or Socrative to evaluate their students. Unfavorable findings: Very few teachers showed technological advances that have allowed progress in the study of pathologies. Several teachers leave the resolution of doubts at the end of the class and sometimes involves repeating things that were not clear. Teachers made little use of technological tools and some did not know how to take full advantage of them.

Evaluation. Favorable Findings: Clinical cases are used. Some teachers review the answers after the test. Some use quizzes with digital tools such as kahoot or Socrative. Teachers use rubrics for the 3 evaluations throughout the course: the clinical history, oral exam and the presentation of a clinical case. Unfavorable findings: They evaluate with 3 written exams during the semester. The exam has no open questions. Activities such as quizzes or presentations do not have any grade. The qualification of attitude is given based on the subjective perception of the teacher.

Environment of learning and interaction of educational actors. Favorable Findings: The classroom has air conditioning, comfortable chairs, it is wide bright and has sound insulation panels. Sometimes the teacher uses the library or other areas for small groups sessions. They have support from residents. Unfavorable findings: The classroom only allows the accommodation of chairs in a certain position. Students do not have spaces in the clinical setting where

they can write comfortably. Some teachers do not move around the room and many of them have low pitch voices. The support of the residents can be conditioned according to their workload.

Discussion

This study has allowed us to characterize the learning environment of the internal medicine course and recognize the factors that intervene to get or not an environment where learning is achieved. All this information it's very important because a suboptimal learning environment has been associated with adverse patient care and learning outcomes.[19]

The results allow us to say that although in general the students perceive a more positive than negative view by DREEM questionnaire, which is similar and even higher to other medical schools in Latinoamerica, India and Aruba that used this questionnaire.[14,15,17,18] We found in the other results multiple points that can be improved.

There is a need to propose transversal objectives for all disciplinary areas, theoretical and practical, paying special attention to the formulation of the attitudinal and procedural objectives that have been most neglected.

Regarding the role of the teacher, the majority of the problems derive from the need of teacher professionalization. However, it must be made clear that the student also has some responsibilities within their learning process and therefore the capacity for autonomy must be constantly cultivated. Teachers have a great responsibility in developing their abilities of communication and empathy skills. In accordance, we must choose a didactic model of medicine that is transversal and integrative.

Finally, we must highlight two additional aspects related to the clinical environment. First, there is a need to meditate on the student – teacher – patient triad and the doctor – resident – student triad; Resident and patient functions within the clinical setting are of great importance in the learning process of students and their roles must be clearly defined. Secondly, to emphasize again the need for a curricular integration and not to divide the theoretical character of the fundamental practical nature of the course.

This information can be used in the curricular redesign of a competency-based course, it is known that the quality of the learning environment that provided the context for training is a predictor of the quality of care provided by graduates for years after graduation.[20] Therefore, efforts to improve the learning environment not only have a positive impact in the settings where trainees learn and participate in patient care but also affect the practice of future graduates, potentially for decades to come.[21]

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Conflicts of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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